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**From:** Kraft, Andrew [Kraft.Andrew@epa.gov]  
**Sent:** 11/4/2013 5:47:26 PM  
**To:** Whalan, John [Whalan.John@epa.gov]; Vulimiri, Suryanarayana [Vulimiri.Sury@epa.gov]  
**CC:** Glenn, Barbara [Glenn.Barbara@epa.gov]; Subramaniam, Ravi [Subramaniam.Ravi@epa.gov]  
**Subject:** RE: has this reference been incorporated into the exhaled breath discussion?  
**Attachments:** spanel2013exhaledbreath.pdf

Okay, thanks John. They did notice that when subjects breathed formaldehyde-free air, they still exhaled formaldehyde (through the nose only) at ~8ppbv... is there any explanation why the nose-exhaled levels are consistently so much higher than the mouth-exhaled levels (unlike any of the other tested compounds)? I think they attribute it to increased absorption in nasal tissues, and gradual release from the nasal tissue over some time following exposure.

Was Ravi brought into this discussion? I have cc'd him here as an FYI.

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**From:** Whalan, John  
**Sent:** Monday, November 04, 2013 12:39 PM  
**To:** Kraft, Andrew; Vulimiri, Suryanarayana  
**Cc:** Glenn, Barbara  
**Subject:** RE: has this reference been incorporated into the exhaled breath discussion?

Andrew,

Sury found this article in July and shared it with me. After reviewing it in depth, this is what I wrote to Sury:

## Ex. 5 Deliberative Process (DP)

John

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**From:** Kraft, Andrew  
**Sent:** Monday, November 04, 2013 12:24 PM  
**To:** Vulimiri, Suryanarayana; Whalan, John  
**Cc:** Glenn, Barbara; Kraft, Andrew  
**Subject:** has this reference been incorporated into the exhaled breath discussion?

... seems to indicate inhaled formaldehyde is not exhaled (to any appreciable extent). If this is the case, we may want to adjust our discussion a bit.